

What is claimed:

- 1 1. An optical component housing comprising a substrate having a substantially planar fiber mount region and an optical component mount region adjacent to the substantially planar fiber mount region.
- 1 2. An optical component housing according to claim 1, wherein the substrate is selected from a group consisting of an aluminum oxide ceramic, a nickel-cobalt alloy, aluminum nitride ceramic, or silicon carbide ceramic.
- 1 3. An optical component housing according to claim 1, further comprising a metallic mount pad formed over the substantially planar fiber mount region and configured to bond to a metal solder.
- 1 4. An optical component housing according to claim 3, further comprising a metallized optical fiber coupled to the metallic mount pad by the metal solder.
- 1 5. An optical component housing according to claim 1, further comprising a fiber mount pad formed over the substantially planar fiber mount region and configured to bond to a glass solder.
- 1 6. An optical component housing according to claim 5, further comprising a bare optical fiber coupled to the fiber mount pad by the glass solder.
- 1 7. An optical component housing comprising a substrate having an optical component mount aperture formed therein and a substantially planar fiber mount region formed on the substrate and adjacent to the optical component mount aperture.
- 1 8. An optical component housing according to claim 7, further comprising an optical component placed within an area defined by the optical component mount aperture.

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1 9. An optical component housing according to claim 8, further
2 comprising a metallic mount pad formed over the substantially planar fiber mount region
3 and configured to bond to a metal solder.

1 10. An optical component housing according to claim 9, further
2 comprising a metallized optical fiber coupled to the metallic mount pad by the metal solder
3 to optically couple the fiber and the optical component.

1 11. An optical component housing according to claim 8, further
2 comprising a fiber mount pad formed over the substantially planar fiber mount region and
3 configured to bond to a glass solder.

1 12. An optical component housing according to claim 11, further
2 comprising a bare optical fiber coupled to the fiber mount pad by the glass solder to
3 optically couple the fiber and the optical component.

1 13. A fiber-coupled optical component comprising:
2 a substrate formed from a semiconductor of a first conductivity type and
3 having an optical component region and a substantially planar fiber mount region adjacent
4 to the optical component region;

5 an active layer selected from a group consisting of a bulk gain material and
6 a quantum well structure formed on the substrate over the optical component region;

7 a semiconductor layer of a second conductivity type different from the
8 substrate, the semiconductor layer formed over the active layer;

9 an electrode layer of a high conductivity material formed over the
10 semiconductor layer; and

11 an optical output coupler formed on a surface of the active layer to provide
12 radiation emitted from the active layer.

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1 14. A fiber-coupled optical component according to claim 13, further
2 comprising a metallic mount pad formed over the substantially planar fiber mount region
3 and configured to bond to a metal solder.

1 15. A fiber-coupled optical component according to claim 14, further
2 comprising a metallized optical fiber coupled to the metallic mount pad by the metal solder
3 to optically couple the fiber and the optical output coupler.

1 16. A fiber-coupled optical component according to claim 13, further
2 comprising a fiber mount pad formed over the substantially planar fiber mount region and
3 configured to bond to a glass solder.

1 17. A fiber-coupled optical component according to claim 16, further
2 comprising a bare optical fiber coupled to the fiber mount pad by the glass solder to
3 optically couple the fiber and the optical output coupler.

1 18. A method for forming a fiber-coupled optical component housing,
2 comprising the steps of:

- 3 a) forming a ceramic substrate;
- 4 b) forming an optical component mountable aperture on a surface of the
5 substrate;
- 6 c) forming a substantially planar fiber mount region on a surface of the
7 ceramic substrate and adjacent to the optical component mountable
8 aperture; and
- 9 d) placing an optical component within an area defined by the optical
10 component mountable aperture.

1 19. A method according to claim 18, further including the steps of:

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- 2 e) forming a metallic mount pad over the substantially planar fiber
3 mount region and configuring said mount pad to bond with a metal
4 solder; and
- 5 f) securing a metallized optical fiber to the metallic mount pad by the
6 metal solder to optically couple the fiber and the optical component.
- 1 20. A method according to claim 18, further including the steps of:
- 2 e) forming a fiber mount pad over the substantially planar fiber mount
3 region and configuring said mount pad to bond with a glass solder;
4 and
- 5 f) securing a bare optical fiber to the fiber mount pad by the glass
6 solder to optically couple the fiber and the optical component.
- 1 21. A method for forming a fiber-coupled optical component, comprising
2 the steps of:
- 3 a) forming a substrate from a III/V semiconductor material of a first
4 conductivity type;
- 5 b) forming an active layer selected from a group consisting of a bulk
6 gain material and a quantum well structure, the active layer being
7 formed over a portion of the substrate;
- 8 c) forming a semiconductor layer over the active layer from a III/V
9 material of a second conductivity type different from the substrate;
- 10 d) forming an electrode layer over the semiconductor layer from a high
11 conductivity material;
- 12 e) forming a substantially anti-reflective optical output coupler on a face
13 of the active layer; and

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14 f) forming a substantially planar fiber mount region on a surface of the
15 substrate and adjacent to the optical output coupler.

1 22. A method according to claim 21, further including the steps of:

2 g) forming a metallic mount pad over the substantially planar fiber
3 mount region and configuring said mount pad to bond with a metal
4 solder; and

5 h) securing a metallized optical fiber to the metallic mount pad by the
6 metal solder to optically couple the fiber and the optical output
7 coupler.

1 23. A method according to claim 21, further including the steps of:

2 g) forming a fiber mount pad over the substantially planar fiber mount
3 region and configuring said mount pad to bond with a glass solder;
4 and

5 h) securing a bare optical fiber to the fiber mount pad by the glass
6 solder to optically couple the fiber and the optical output coupler.

1 24. An optical component housing comprising:

2 a high thermal conductivity base;

3 a low thermal conductivity substrate having a substantially planar fiber
4 mount region therein and abutting the high thermal conductivity base with a surface at the
5 same level as the base;

6 an unpackaged optical component mounted on the base adjacent to the
7 aperture, said component having a top surface metallized to serve as an electrode.

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1 25. The optical component housing according to claim 24, further
2 comprising a metallized fiber mount pad formed over the substantially planar fiber mount
3 region, and a metallized optical fiber mounted to the fiber mount pad with a metal solder.

1 26. The optical component housing according to claim 24, further
2 comprising a fiber mount pad formed over the substantially planar fiber mount region and
3 configured to bond to a glass solder, and a bare optical fiber mounted to the fiber mount
4 pad with a glass solder.